

INCIDENCE OF VENTILATOR-ASSOCIATED PNEUMONIA IN BURN PATIENTS WITH INHALATION INJURY AND THE VALUE OF ROUTINE ENDOTRACHEAL ASPIRATE SURVEILLANCE CULTURES TO PREDICT INVOLVEMENT OF MULTIDRUG RESISTANT MICROBIAL ETIOLOGY

Authors : D. Logie¹, N. Brusselaers^{1, 2}, S. Monstrey³, D. Vogelaers^{1, 2}, S. Blot^{1, 2}

¹Ghent University, Ghent, Belgium, ²Ghent University Hospital, General Internal Medicine, Ghent, Belgium, ³Ghent University Hospital, Plastic Surgery and Burn Unit, Ghent, Belgium

INTRODUCTION. Burn patients with inhalation injury requiring mechanical ventilation (MV) are at particular risk for ventilator-associated pneumonia (VAP). Routine endotracheal surveillance cultures (SC) may provide information about the causative pathogen in subsequent VAP, and hence contribute to high rates of early appropriate antibiotic therapy [1].

OBJECTIVES. To assess the value of routine endotracheal SC to predict multidrug resistant (MDR) etiology of VAP in burn patients with inhalation injury.

METHODS. We performed a historical cohort study including all burn patients with inhalation injury requiring MV admitted to the burn unit at Ghent University Hospital (2002-2009). Routine endotracheal SC are sampled thrice weekly. Only results of the last SC before VAP onset were considered. VAP was diagnosed on clinical, radiological, and microbiological grounds, and supported by a Clinical Pulmonary Infection Score (CPIS) >6.

RESULTS. 53 patients were included. Median age and total burned surface area were 44y (IQR 39-55y) and 35% (IQR 19-50%) respectively. The median Belgian Outcome in Burn Injury score was 5 (IQR, 4-6), reflecting a predicted mortality of 30% (IQR 20-50%) [2]. Overall, 70 episodes of VAP occurred in 46 patients (86.8%). Median duration of MV prior to onset VAP was 7 days (IQR 4-9 days). The incidence of VAP was 55 episodes/1000 MV days and 112 episodes/1000 MV days "at risk". The median CPIS was 8 (IQR 6-9). Most prevalent pathogens were *Pseudomonas aeruginosa* (39.8%), *Staphylococcus aureus* (12.9%), and *Enterobacter* spp (10.8%). In 23 episodes (32.9%) at least one MDR causative pathogen was involved, mostly MDR *P. aeruginosa* and ESBL-producing *Enterobacteriaceae*. The sensitivity and specificity of SC to predict MDR pathogens in subsequent VAP was respectively 0.83 and 0.96. This corresponds with a positive predictive value (PPV) of 0.87 and a negative predictive value (NPV) of 0.95. A subgroup analysis was performed on *P. aeruginosa* (37 episodes). The sensitivity and specificity of SC to predict MDR *P. aeruginosa* was 0.90 and 0.99, respectively. The PPV and NPV was 0.90 and 0.99 respectively.

CONCLUSIONS. The incidence of VAP in burn patients with inhalation injury is high. In this cohort routine SC appear to have excellent operating characteristics to predict MDR involvement in VAP.

REFERENCE.

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2. The Belgian Outcome in Burn Injury Study Group. Development and validation of a model for prediction of mortality in patients with acute burn injury. *Br J Surg* 96: 111-7.

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